



CHANGING
Maryland
for the Better

Tuberculosis complicated by diabetes mellitus — Maryland, 2014–2016

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Department of Health and Mental Hygiene



Presented to:
Date

MARYLAND
DEPARTMENT OF HEALTH
& MENTAL HYGIENE

Background

- Diabetes becoming epidemic around the world
- Particularly high rates in locations with high TB rates
- Growing understanding that comorbid DM leads to worse TB outcomes¹
 - Increased risk for combined treatment failure or death (RR 1.69 [1.36–2.12])
 - Increased risk for death (RR 1.89 [1.52–2.36])
 - RR 4.95 [2.69–9.10] in adjusted studies
 - Increased risk for relapse (RR 3.89 [2.43–6.23])

¹Baker MA. The impact of diabetes on tuberculosis treatment outcomes: a systematic review. BMC Medicine 2011, 9:81.



Maryland Guidance

- Expert panel convened by CTBCP to discuss response



STATE OF MARYLAND

DHMH

Maryland Department of Health and Mental Hygiene

Martin O'Malley, Governor – Anthony G. Brown, Lt. Governor – Joshua M. Sharfstein M.D., Secretary

HEALTH OFFICER MEMORANDUM

DATE:

November 19, 2014

HO Memo #14-036

1. Screen all suspect/confirmed TB cases for DM
2. Perform TDM if A1c >7%, severe TB, evidence relapse/failure, delayed response to treatment
3. Work to link patients to care for DM

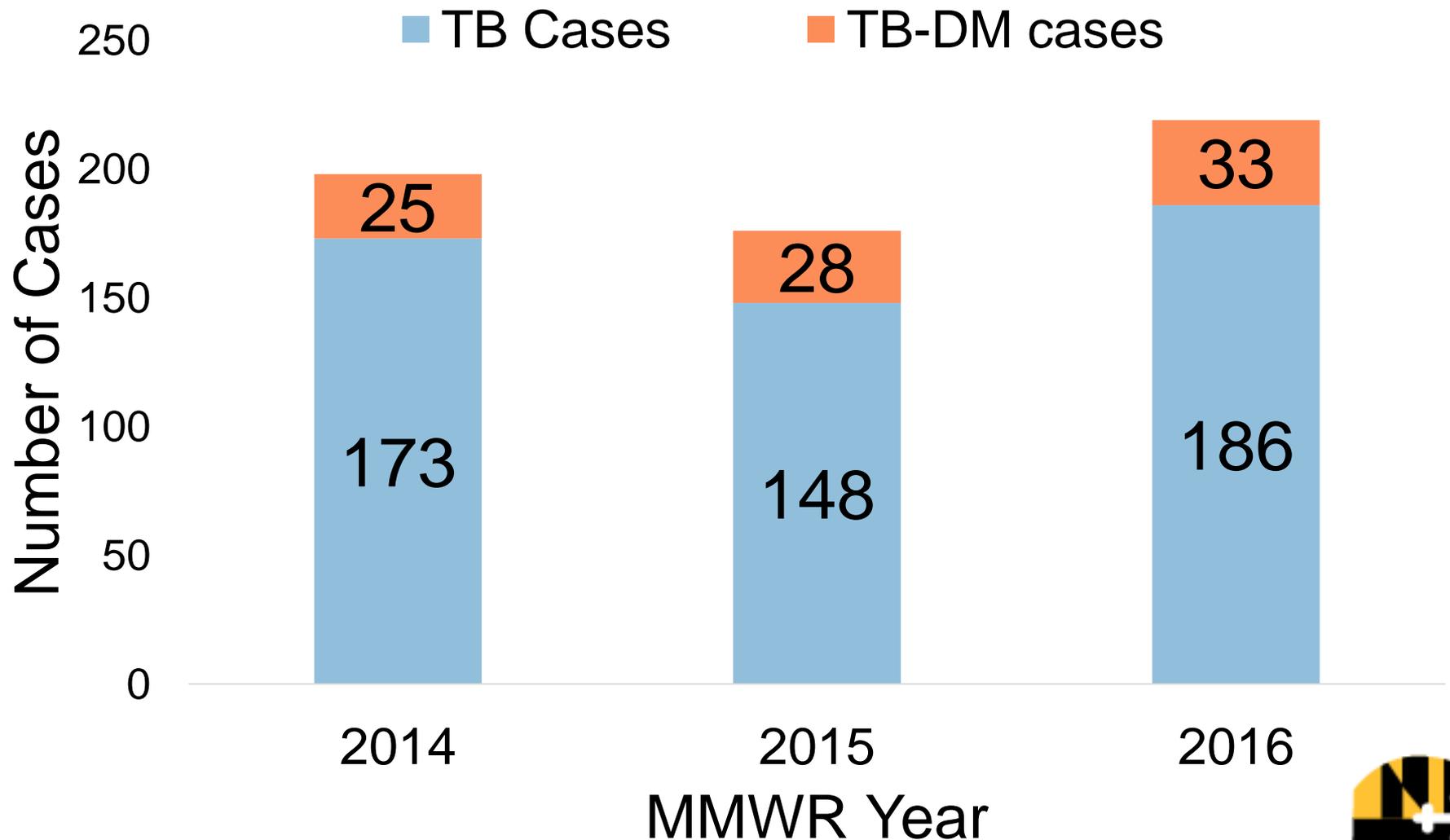


Methods

- TB cases for MMWR years 2014–2016 reviewed
- Data abstracted from LHD charts:
 - Confirm DM diagnosis
 - Blood glucose and A1c levels
 - DM complications
 - DM medications (insulin vs. oral)
 - Determine whether pt. (successfully?) referred to DM provider
 - TDM performed? Results?
 - Regimen changed as a result of TDM



TB and TB-DM cases — Maryland, 2014–2016



Caveat

Of 86 total TB-DM cases, charts have only been reviewed for 65 (75.6%) so far.

Data in following slides only describes those 65 cases.

If you haven't heard from me yet...I will be calling you...



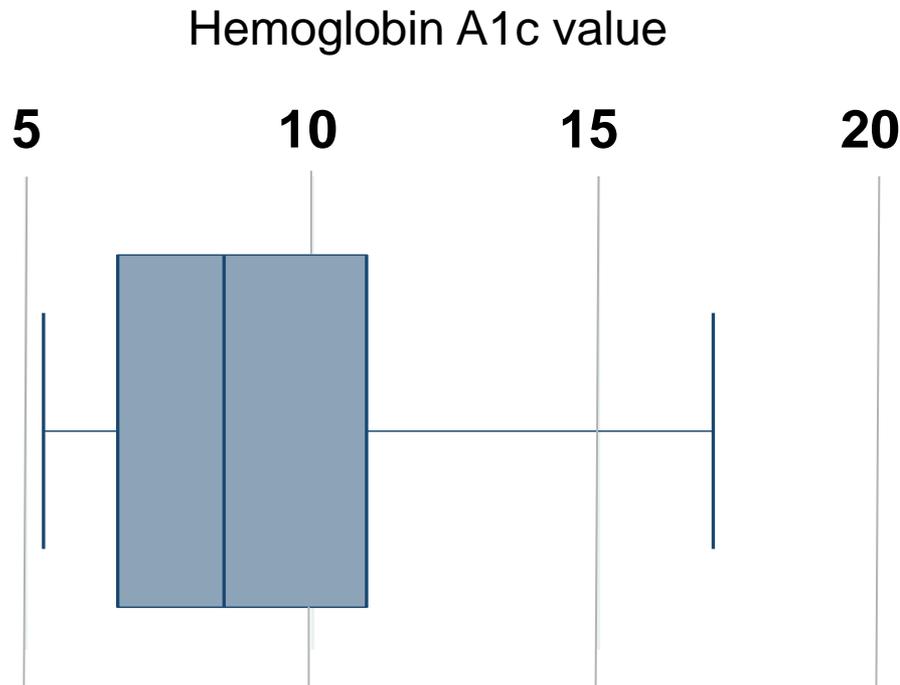
Hemoglobin A1c

- Describes percentage of glycated hemoglobin in RBCs
- Reflects mean blood sugar over last 8-12 weeks
- Diabetes diagnosed by value $\geq 6.5\%$

- Of 65 charts reviewed, 44 (67.7%) had A1c data available



Hemoglobin A1c, n = 44



Range: 5.3%–17%

Median: 8.45%

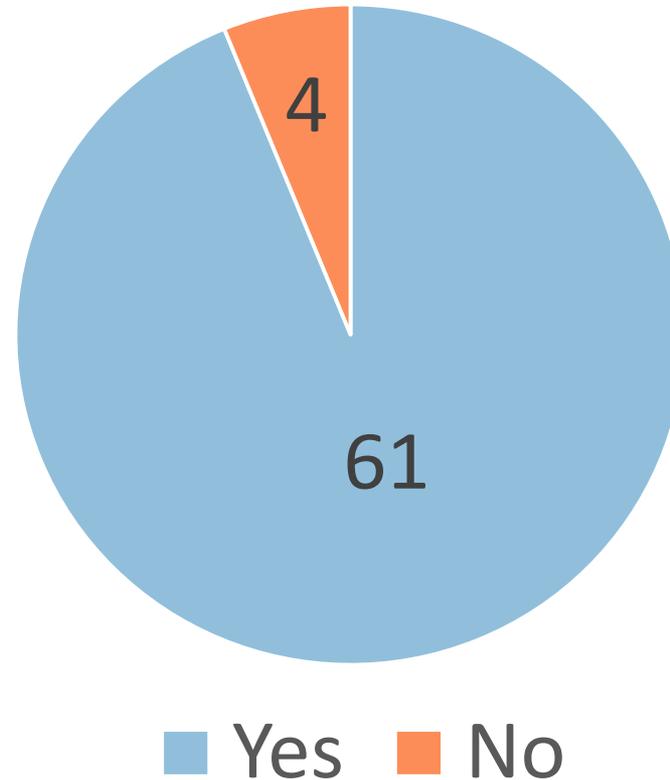
25th percentile: 6.6%

75th percentile: 10.95%

16 cases (24.6%) had A1c <7% (“controlled” DM)



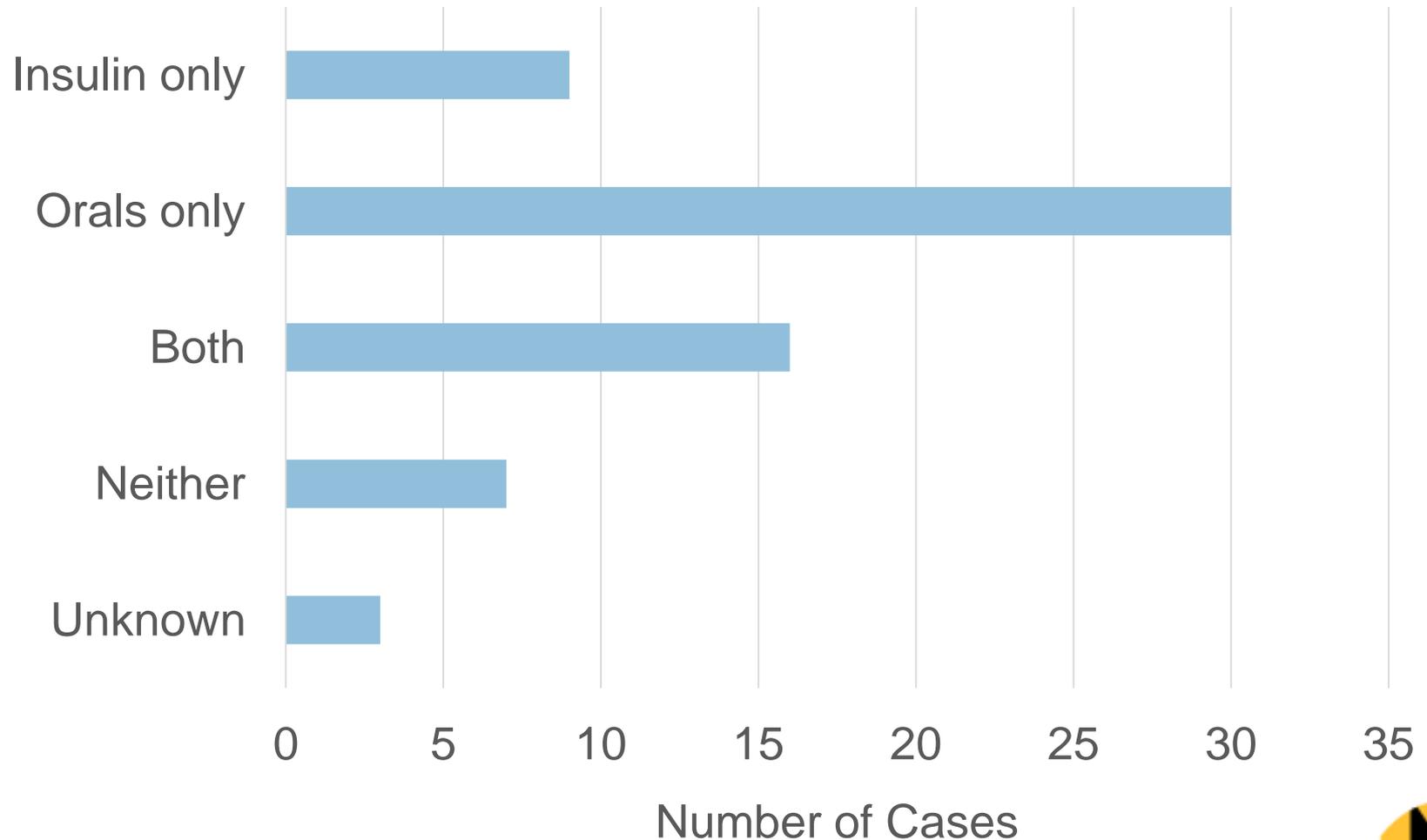
Was the case aware of their DM diagnosis prior to presenting to the HD?



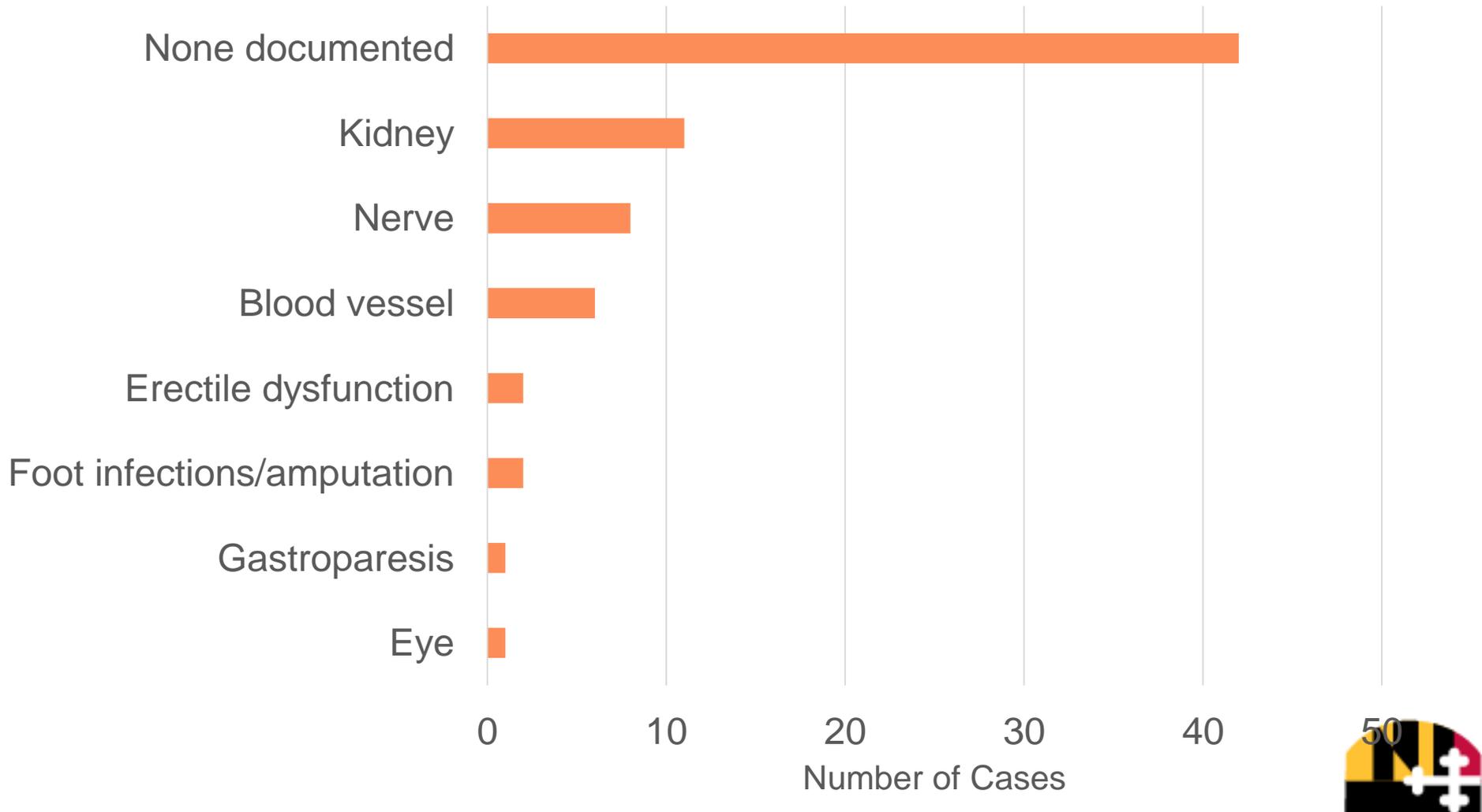
Anecdotally, DM was often diagnosed during hospitalization during which TB also diagnosed.



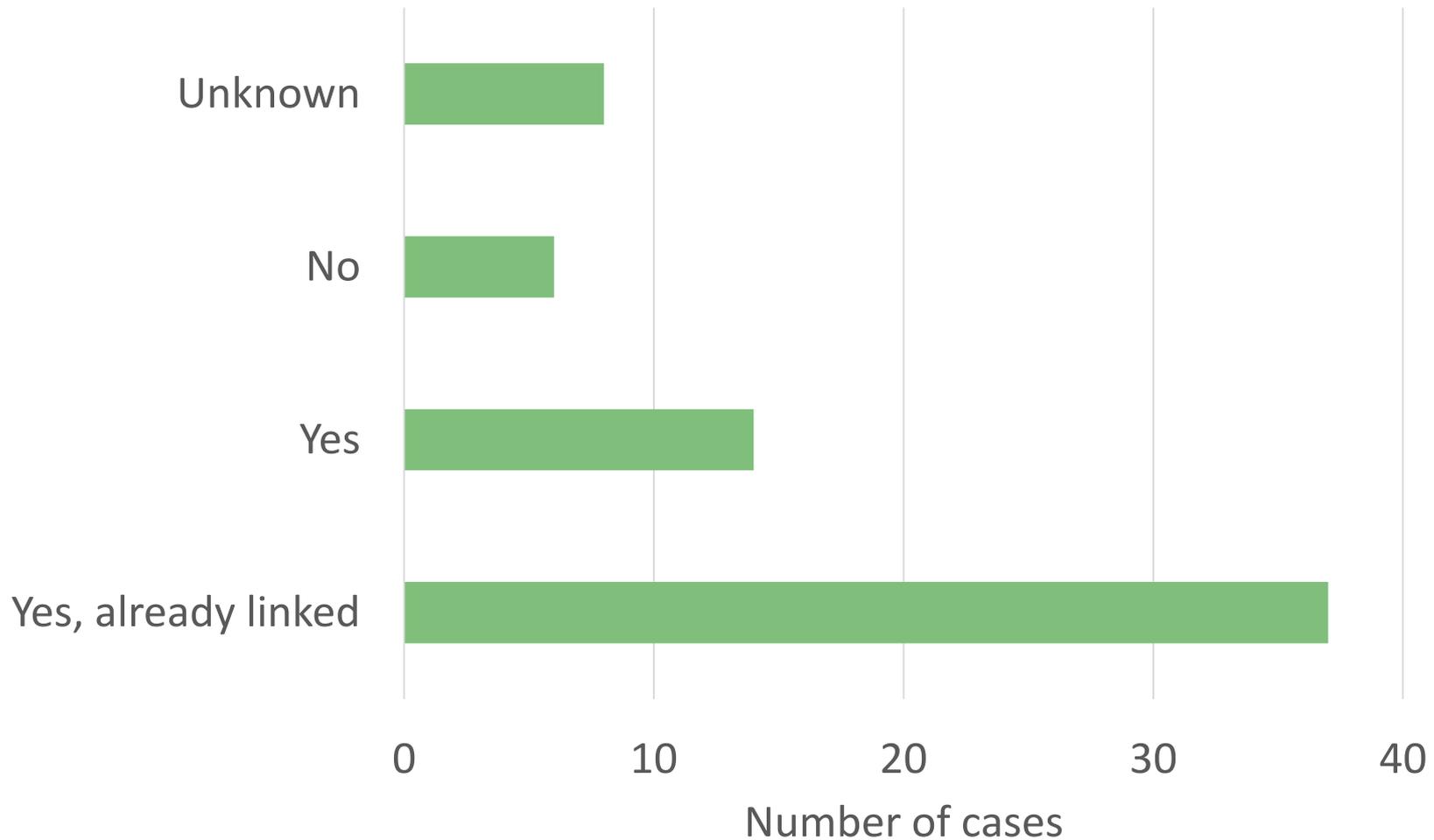
What types of DM medications were the TB-DM cases taking?



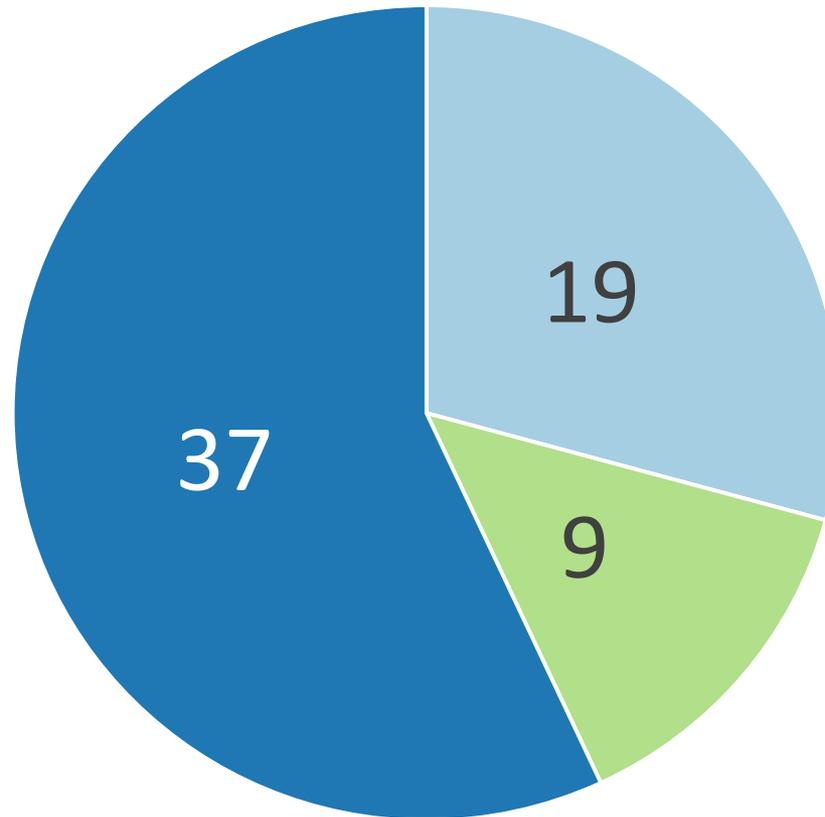
What diabetic complications did the cases report?



Were cases referred to a provider for ongoing DM care?



Were cases able to see a provider for their DM?

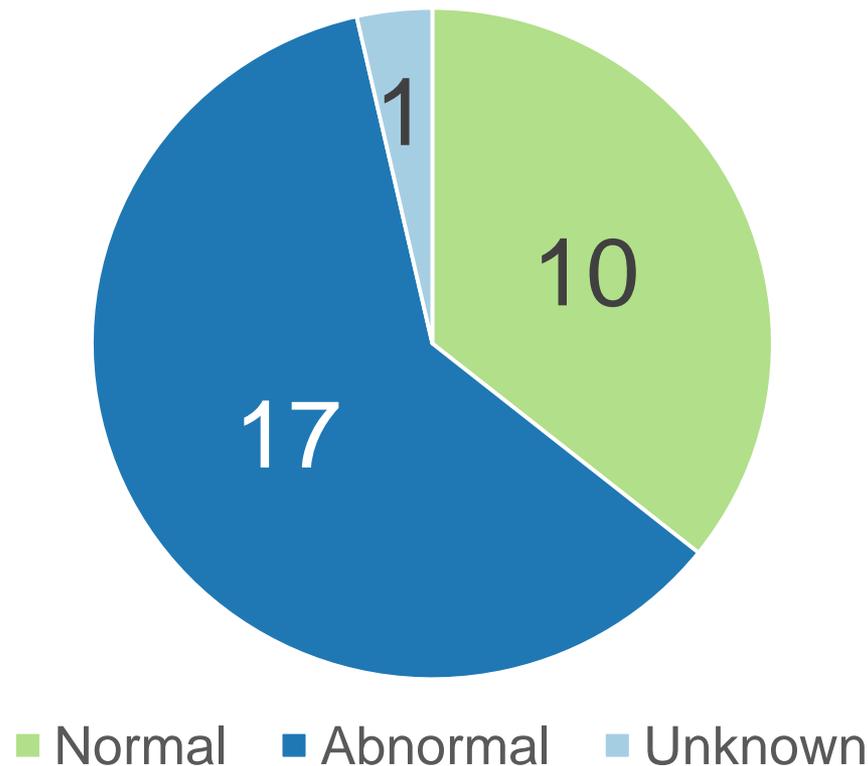


■ Unknown ■ No ■ Yes

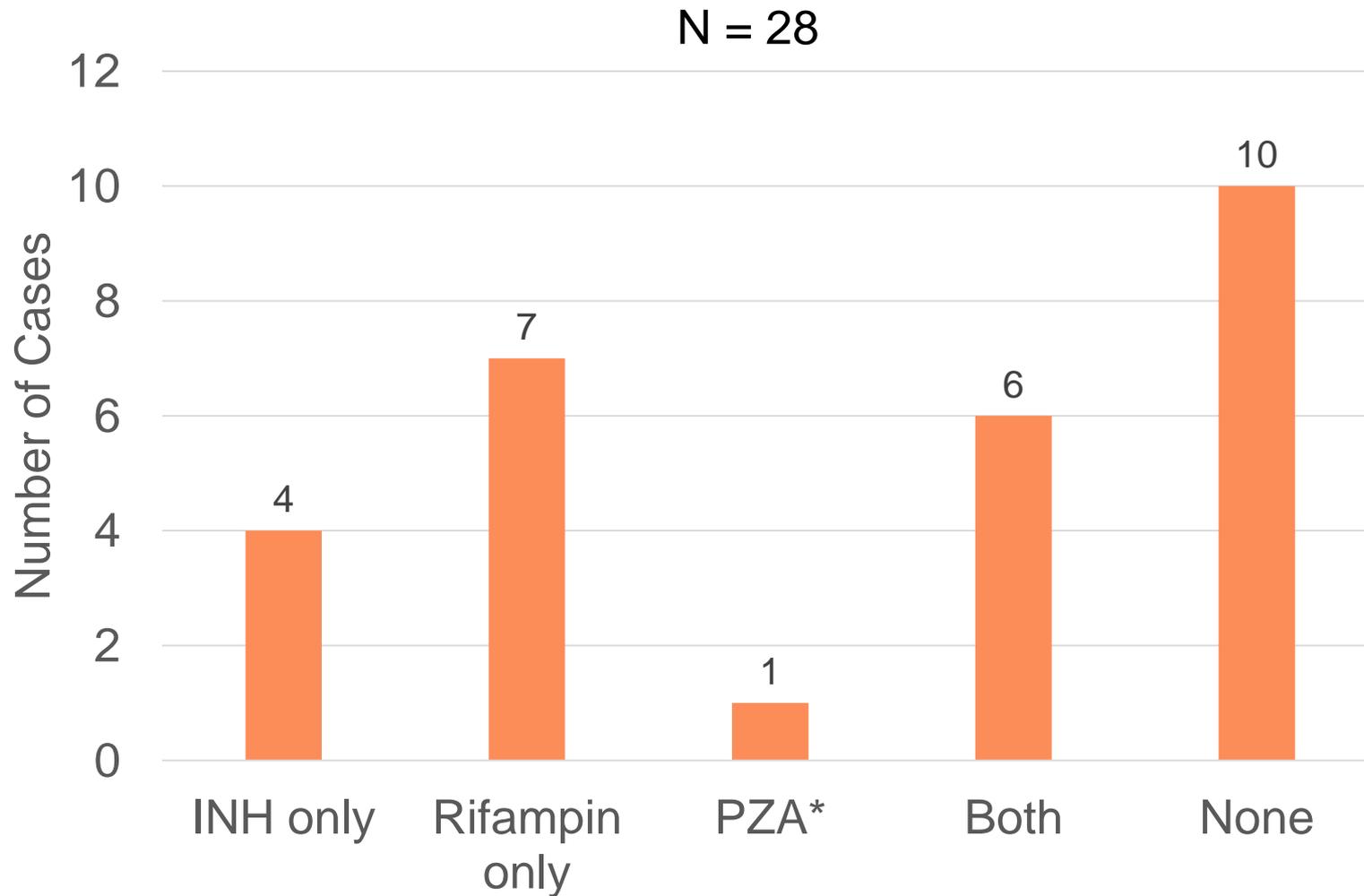


Therapeutic Drug Monitoring (TDM) Results

- Of 65 cases reviewed thus far, 28 had TDM performed
- 100% of cases with low results had medication dose changed as a result



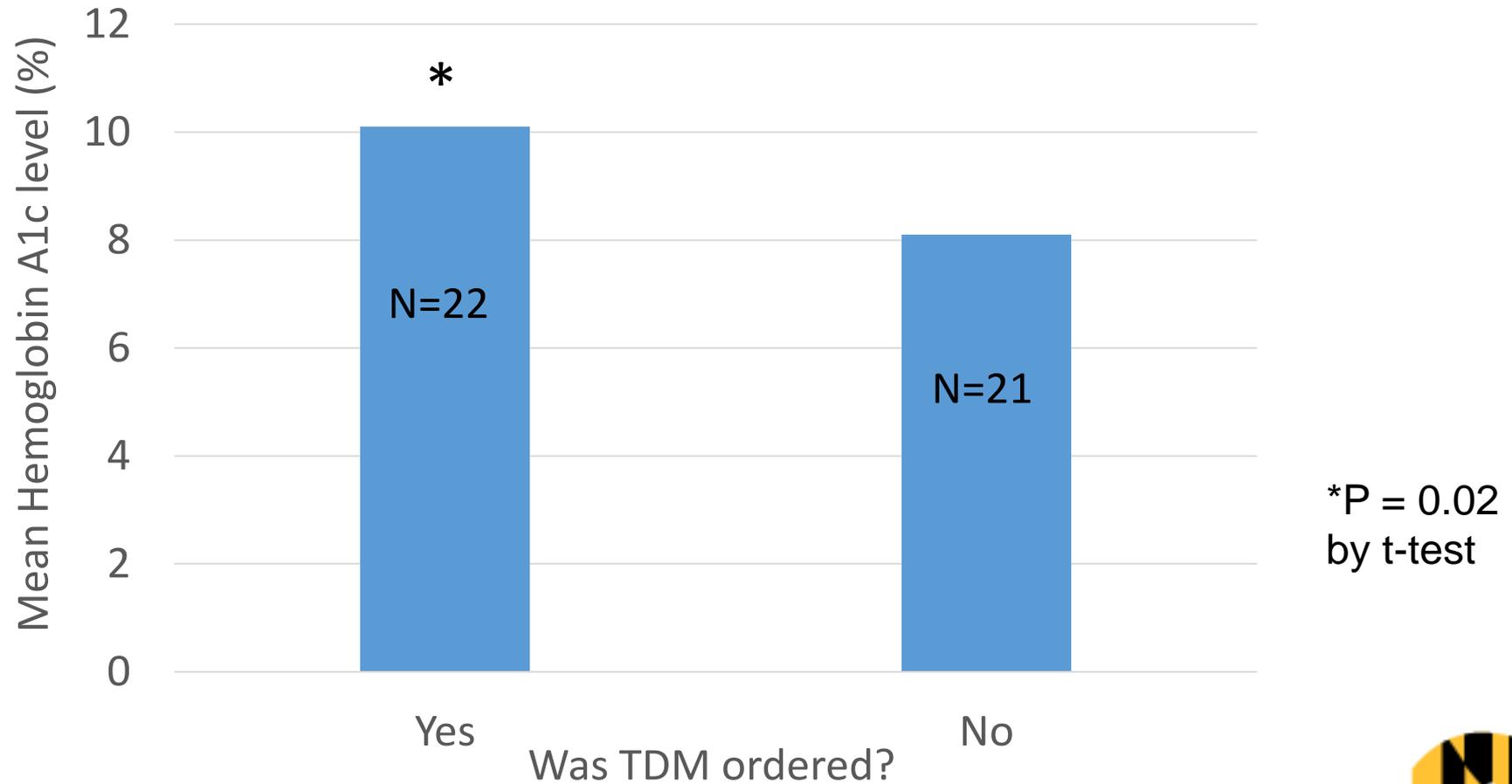
Which drug levels were abnormal on TDM?



*PZA levels rarely ordered



What was the A1c for patients who received TDM?



Outcomes

More to come...



Thank you!

Questions?

